Algebra 1 2.8

Solve equations for given variables.

Use formulas to solve real-world problems

variable

equation

literal equation

solve for...

formula

dimensional analysis

How do we solve equations?

$2x + 3 = 5$

$-3 \quad -3$

$\frac{2x}{2} = \frac{2}{2}$

$x = 1$

$2y = mx + 8$

$y = \}$?

$m =$

$x =$

Example 1 Solve for a Specific Variable

Solve $4m - 3n = 8$ for m.

$+3n \quad +3n$

$\frac{4m}{4} = \frac{3n}{4} + \frac{8}{4}$

$m = \frac{3}{4}n + 2$

Solve each equation for the variable indicated.

1A. $15 = 3n + 6p$, for n

$-6p \quad -6p$

$\frac{-6p}{3} + \frac{15}{3} = \frac{3n}{3}$

$-2p + 5 = n$

$n = -2p + 5$

$n = 5 - 2p$

1B. $\frac{k-2}{5} = 11j$, for k

$5 \cdot \frac{(k-2)}{5} = 11j \cdot 5$

$k - 2 = 55j$

$+2 \quad +2$

$k - 2 = 11j + 2$

$+2$

$k = 11j + 2$

$k = 55j + 2$

$k = 2 + 55j$

8. $u = vw + z$, for v

9 $x = b - cd$, for c

10. $fg - 9h = 10j$, for g

11. $10m - p = -n$, for m

$u = vw + z \quad v =$

$-z \qquad -z$

$\frac{u}{w} - \frac{z}{w} = \frac{vw}{w}$

$v = \frac{u}{w} - \frac{z}{w}$

$x = b - cd$

$-b \quad -b$

$\frac{x-b}{d} = \frac{-cd}{d}$

$c = \frac{-x}{d} + \frac{b}{d}$

$-1\left(\frac{x}{d}\right) - \left(\frac{b}{d}\right)^{-1} = (-c)^{-1}$

$-\frac{x}{d} + \frac{b}{d} = c$

$fg - 9h = 10j$

$+9h \quad +9h$

$\frac{fg}{f} = \frac{10j}{f} + \frac{9h}{f}$

$g = \frac{10j}{f} + \frac{9h}{f}$

$10m - p = -n$

$+p \quad +p$

$\frac{10m}{10} = \frac{-n}{10} + \frac{p}{10}$

12. $r = \frac{2}{3}t + v$, for t

13. $\frac{5}{9}v + w = z$, for v

14. $\frac{10ac - x}{11} = -3$, for a

15. $\frac{df + 10}{6} = g$, for f